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**(54) FABRICATION METHOD OF CARBON
NANOTUBE FIELD Emitter UTILIZING
ELECTROPHORESIS**

(57) Abstract:

PROBLEM TO BE SOLVED: To provide a fabrication method of a field emitter that has a low work function and working voltage, and that extends its working lifetime by enhancing the durability.

SOLUTION: The field emitter is provided with a chip constructed on the surface of a substrate 11 by forming a strip-shaped cathode 12, on which an insulating layer 13 with a hole 13a, and a gate 14 is formed thereon in such a manner that it has an opening 14a corresponding to the hole 13a, followed by attaching powder of carbon nanotube 25 on the surface of the cathode 12. The fabrication method of the field emitter comprises the following stages: (a) Disposing a

field emitter substrate formed with an electrode plate and the cathode in a container with a solution containing powder of carbon nanotube, (b) adhering powder of carbon nanotube to the cathode surface at a normal temperature range by applying a prescribed bias voltage between the electrode plate and cathode, and (c) subjecting the substrate with the powder of carbon nanotube attached to a heat treatment.

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